

February 7, 1997

MEMORANDUM

TO: Orville D. Green, Assistant Administrator
Air & Hazardous Waste

FROM: Martin Bauer, Chief *M. Bauer*
Air Quality Permitting Bureau

SUBJECT: Issuance of Tier II Operating Permit #777-00014 to
POE Asphalt Paving, Inc., Portable Hot Plant Madsen #1400

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 400 through 406 (Rules for the Control of Air Pollution in Idaho) for issuing Operating Permits.

PROJECT DESCRIPTION

This project is for an Operating Permit (OP) for the POE Asphalt Paving, Inc., portable Hot Plant Madsen #1400, Idaho. Emission sources existing at the facility are as follows: pre-dryer material handling; dryer and post-dryer material handling controlled by the cyclone and the baghouse in series; and fugitive dust from aggregate storage piles; paved and unpaved roads, and general maintenance.

SUMMARY OF EVENTS

On January 17, 1995, the Division of Environmental Quality (DEQ) received the facility's Tier II OP application. On December 4, 1995, the application was determined complete. On June 28, 1996, a proposed Tier II OP was issued for public comment. The public comment period was from July 11, 1996, through August 9, 1996. No comments were received.

RECOMMENDATIONS

Based on the review of the OP application and all applicable state rules and federal regulations concerning the permitting of air pollution sources, the Bureau staff recommends that POE Asphalt Paving, Inc., Idaho, be issued a Tier II OP for the portable Hot Plant Madsen #1400.

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cc: J. Bellatty, LRO
OP File Manual
Source File
COF

June 28, 1996

MEMORANDUM

TO: Brian R. Monson, Chief
Operating Permits Bureau
Permits and Enforcement

FROM: Yihong Chen, Air Quality Engineer *YC*
Operating Permits Bureau
Darrin Mehr, Air Quality Engineer *DM*
Operating Permits Bureau
Mike Simon, Air Quality Engineer *MS*
Construction Permits Bureau

THROUGH: Susan J. Richards, Air Quality Permits Manager: *SR*
Operating Permits Bureau

SUBJECT: Technical Analysis for Proposed Tier II Operating Permit #777-00014
POE Asphalt Paving, Inc., Portable Hot Plant Madsen #1400

PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 16.01.01 Sections 400 through 406 (Rules for the Control of Air Pollution in Idaho) for issuing Operating Permits.

FACILITY DESCRIPTION

The Poe Asphalt Paving, Inc., portable hot plant Madsen #1400, currently located near Grangeville, Idaho, is used to process raw materials of aggregate and asphalt emulsion into asphaltic concrete.

Aggregate is loaded from stockpiles into the hopper of the cold feed bins by front end loader; the aggregate is metered from the hoppers onto a conveyor belt and is transported into the rotary dryer, where a diesel fueled burner is used to dry and heat the aggregate; after being dried and heated, the aggregate is lifted via the hot elevator to the Symons screens which are located just above the pug mill; the particulate collected by both the cyclone and the baghouse is transported by covered auger to the hot elevator; after screening, the hot aggregate drops into hot bins according to size; to control aggregate size distribution in the final batch mix, the operator opens various hot bins over a weigh hopper until the desired mix and weight are obtained; the mix drops into a pug mill and is dry-mixed; the liquid asphalt cement is then transferred to the pug mill where it is mixed with the aggregate for an additional period of time; then the hot mix may be dropped into a waiting truck, or in the absence of a truck, may be conveyed to the surge bin via the hot mix elevator.

Emissions from the drum dryer, post-dryer material handling; pug mill screens, and pug mill are controlled by passing through a cyclone and a baghouse in series. Other emissions are generated from pre-dryer material transport, handling, and storage, and fugitive road dust.

The facility was installed in the 1960s. No modification occurred after June 11, 1973 per applicant's submittal. Therefore, the facility is not subject to the New Source Performance Standards (NSPS) in accordance with 40 CFR 60, Subpart I.

PROJECT DESCRIPTION

This project is for a synthetic minor Operating Permit (OP) for the following process units and fugitive emission sources.

Process Units:

- (1) Drum (Rotary) Dryer Burner - with a maximum rated heat input capacity of 100.05 Million British Thermal Unit per hour (MMBtu/hr), per applicant's submittal. The emissions from this source are controlled.

Drum Dryer Burner Specifications:

Manufacturer:	Gencore
Model:	#751
Fuel:	#1 or #2 fuel oil

- (2) Drum (Rotary) Dryer - with a maximum rated process hourly rate of 76 ton of aggregate per hour (ton/hr), per applicant's submittal. The emissions from this source are controlled.

Drum Dryer Specifications:

Manufacturer: Madsen
Model: Not Available

- (3) Pug Mill Screens - with a maximum rated process hourly rate of 76 ton of aggregate per hour (ton/hr), per applicant's submittal. The emissions from this source are controlled.

Pug Mill Screens Specifications:

Manufacturer: Symons
Model: Not Available

- (4) Pug Mill - with a maximum rated process hourly rate of 80 ton of asphaltic concrete per hour (ton/hr), per applicant's submittal. The emissions from this source are controlled.

Pug Mill Specifications:

Manufacturer: Madsen
Model: Not Available

- (5) Material handling - post-dryer material handling, transport, and storage. The emissions from this source are controlled.
- (6) Cyclone - primary control device; captures particulate matter from the rotary dryer burner, rotary dryer, pug mill screens, post dryer material handling, and pug mill. The cyclone specifications are not available.
- (7) Baghouse - secondary control device; captures particulate matter in the air stream from cyclone.

Baghouse Specification:

Manufacture	Madsen
Model	4000 lb
Inlet Flow Rate Range	Not Available
Inlet Gas Flow Temperature	Not Available
Pressure Drop Range	Not Available
Air/cloth Ratio	7.27 : 1
Efficiency	98.8%

Stack Specification:

Height:	16 feet
Exit Diameter:	26"x 24"
Exit Gas Flow Rate:	11,333 acfm
Exit Temperature:	350°F

- (8) Material handling - pre-dryer material handling, transport, and storage.
- (9) Surge Bin - hot mix asphalt concrete storage; emissions of particulate matter are negligible.

Fugitive sources:

- (1) Aggregates storage piles.
- (2) Road dust.
- (3) Screen changing and general maintenance.

A more detailed process description is found in the application materials.

SUMMARY OF EVENTS

On January 17, 1995, the Division of Environmental Quality (DEQ) received a Tier II Operating Permit (OP) application prepared by Spidell & Associates. On February 9, 1995, DEQ returned the submittal due to the lack of signatures on the cover letter and application forms. The application materials of Grangeville facility, Madsen #1400, were resubmitted on June 16, 1995. On July 17, 1995, DEQ determined the application incomplete.

On August 9, 1995, DEQ received a letter dated August 8, 1995, written by Cameron Houlgate of Spidell & Associates indicating that the application for the Tier II permit was withdrawn. On August 18, 1995, Mr. Houlgate was contacted by Darrin Mehr, Air Quality Engineer, to clarify POE Asphalt's permitting intentions. On August 25, 1995, a letter was sent out by DEQ indicating that a Tier II permit is the appropriate method to limit facility's potential to emit.

A Permit to Construct (PTC) application for the Grangeville facility, Madsen #1400 was submitted to the Construction Permits Bureau (CPB) by Spidell & Associates and received on September 19, 1994. The application was transferred and received by Operating Permits Bureau (OPB) on November 3, 1995. Correspondence regarding the transfer of the PTC application to OPB by CPB was sent to POE Asphalt on November 3, 1995, and November 6, 1995. On December 4, 1995, DEQ determined the application complete.

On January 9, 1996, DEQ received a submittal regarding the installation or modification date of the facility. Based on the phone conversation between DEQ staff and Mr. Damon on February 1, 1996, and the letter received by DEQ on February 7, 1996, the facility voluntarily granted DEQ a forty five (45) day extension period.

On March 15, 1996, DEQ sent a letter requesting additional information which was necessary in order to complete the technical analysis. On March 26, 1996, POE granted DEQ a forty eight (48) day extension. On April 12, 1996, DEQ sent a second request letter requesting that POE submit the supplemental information addressed in the letter dated March 15, 1996 by April 19, 1996. On April 23, 1996, POE provided part of requested information by phone. On April 26, 1996, POE granted DEQ an extension for a proposed permit until May 10, 1996. On May 6, 1996, POE supplied information on its drum (rotary) dryer burner. On May 9, 1996, POE granted DEQ an extension for a proposed permit until May 17, 1996.

A public comment period has been scheduled for the proposed permit.

DISCUSSION

1. Emission Estimates

Emission estimates were provided by POE Asphalt Paving, Inc., as prepared by the facility's consultant, Spidell and Associates, and can be seen in the June 16, 1995, application and in the September 19, 1995, amended application. DEQ also estimated the PM, PM-10, SO₂, NO_x, CO, VOC, and HAPs emissions from process units using emission factors from AP-42, Section 11.1 (Hot Mix Asphalt Plants, 1/95), Section 13.2.4 (Aggregate Handling and Storage Piles, 1/95), Section 1.3 (Fuel Oil Combustion, 1/95), and Section 8.19.1 (Sand and Gravel Processing, 9/91). The calculation spreadsheet of permitted emissions is in Appendix A.

PM-10 and SO₂ are the pollutants that trigger major source status for the POE Asphalt Paving, Inc., Portable Hot Plant Madsen #1400, in accordance with DEQ policy (April 4, 1996). The potential to emit (PTE) of PM-10 is above 100 T/yr, which was calculated by adding PM-10 emissions from stack and that from process units at its design capacity and operated at 8760 hours per year. The PTE of SO₂ is also above 100 T/yr, and was calculated at the drum (rotary) dryer burner's design capacity and operated at 8760 hours per year. The calculation spreadsheet of PTE is in Appendix B (prior to permitting).

The applicant chose to net out of major source Tier I permitting requirements by limiting the PTE of PM-10 and SO₂ to less than 100 T/yr each. The applicant accepted enforceable limits as follows: 1) product rate of asphaltic concrete shall not exceed 700,800 tons per year; 2) the #1 or #2 fuel oil usage of entire facility shall not exceed 3,568,355 gallons per year; 3) primary (the cyclone) and secondary (the baghouse) control devices shall be used to control the emissions generated from rotary dryer burner, rotary dryer, post-dryer material handling, pug mill screens and pug mill, and the pressure drop across the cyclone and the baghouse shall be within the range of 5" -7" water gauge; 4) fugitive dust generated from roads, storage piles, screen changing and general maintenance shall be reasonably controlled.

The applicant has been unable to supply manufacturer's specifications and operating recommendations for the control equipment. However, the pressure drop across the control equipment in series was provided by the applicant.

The applicant has been unable to supply the model for Drum Dryer, Pug Mill Screens, and Pug Mill. However, the design rated capacity was given for each equipment.

The summary of the emissions under permitted limits can be found in Appendix C.

Compliance determination with the proposed emission limits shall be based on the sections, OPERATING REQUIREMENTS and MONITORING AND RECORDKEEPING REQUIREMENTS, in the permit.

2. Area Classification

POE Asphalt Paving, Inc., Portable Hot Plant Madsen #1400, is permitted to be operated in areas classified as attainment or unclassifiable for all federal and state criteria air pollutants (i.e., PM, PM-10, CO, NO_x, and SO₂).

3. Facility Classification

The facility is not a designated facility as defined in IDAPA 16.01.01.006.25. The facility is classified as an A2 source because the actual emissions of PM-10 and SO₂ are less than 100 tons per year, respectively.

4. Regulatory Review

This operating permit is subject to the following permitting requirements:

a.	<u>IDAPA 16.01.01.123</u>	Certification of documents
b.	<u>IDAPA 16.01.01.135</u>	Excess Emissions Reports
c.	<u>IDAPA 16.01.01.401</u>	Tier II Operating Permit.
d.	<u>IDAPA 16.01.01.403</u>	Permit Requirements for Tier II Sources.
e.	<u>IDAPA 16.01.01.404.01(c)</u>	Opportunity for Public Comment.
f.	<u>IDAPA 16.01.01.404.04</u>	Authority to Revise Operating Permits.
g.	<u>IDAPA 16.01.01.406</u>	Obligation to Comply.
h.	<u>IDAPA 16.01.01.470</u>	Permit Application Fees for Tier II Permits.
i.	<u>IDAPA 16.01.01.500</u>	Registration Procedures and Requirements for Portable equipment.
j.	<u>IDAPA 16.01.01.625</u>	Visible Emission Limitation.
k.	<u>IDAPA 16.01.01.650</u>	General Rules for the Control of fugitive Dust.
l.	<u>IDAPA 16.01.01.728</u>	Distillate Fuel Oil
m.	<u>IDAPA 16.01.01.805</u>	Rules for Control of Hot-Mix Asphalt Plants.

5. Modeling

No modeling was performed for this project.

FEES

Fees apply to this facility in accordance with IDAPA 16.01.01.470. The facility is subject to permit application fee for Tier II permits of five hundred dollars (\$500.00). IDAPA 16.01.01.470 became effective on March 7, 1995.

AIRS

AIRS data entry sheet can be found in Appendix D.

RECOMMENDATIONS

Based on the review of the Operating Permit application and applicable state and federal rules and regulations concerning the permitting of air pollution sources, the Bureau staff recommends that POE Asphalt Paving, Inc., be issued a Tier II Operating Permit for the Portable Hot Plant Madsen #1400. An opportunity for public comment shall be provided as required by IDAPA 16.01.01.404.01. Staff also recommends that the facility be notified of the Tier II permit fee requirement in writing. This fee will be applicable upon issuance of the permit.

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cc: J. Bellatty, NCIRO

Source File

COF

APPENDIX A

APPENDIX B

Appendix B-1

Company Name: POE Asphalt Paving, Inc. Madison 1400, portable
 Project: PTE (PM10) Estimation
 Grangeville, ID
 Engineer: Yihong
 Date: 13-May-96

SUM(PM10, T/yr)= 1619.88 MAX(HAPs, T/yr)= 1.58 SUM(NOx, T/yr)= 62.60
 SUM(SO2, T/yr)= 166.68 SUM(HAPs, T/yr)= 7.72 SUM(VOC, dryer, T/yr)= 0.63
 SUM(PM, T/yr)= 11275.01 SUM(CO, T/yr)= 15.65

Operating hours per year=

8760

Fuel oil sulfur content=

0.5 %

Reference	Process	Pollutants	Procs. Rate	Unit	EFs	Unit	Uncontl. Emis. (lb/hr)	Cost Eff.	Cost Emis. T/yr	Remark
	Pre-Dryer									Per application, aggregate= 95% of product $E \text{ (lb/hr)} = EF \text{ (lb/T)} \times \text{pro. rate (T/hr)}$ $E \text{ (T/yr)} = E \text{ (lb/hr)} \times \text{Oper. hour (hr/yr)} / 2000 \text{ (lb/T)}$
AP-42,13.2.4(1/95)	loader -> cold aggregate bins	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35 Mean wind speed (U, mph)= 10
same as above	cold aggregate bins->conveyor	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35 Moisture content (M%)= 4 %
same as above	conveyor -> drum dryer	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35 Particle size multiplier(k)= 0.35 PM10 (< 10 micromet) $E \text{ (lb/T)} = k \times (0.0032) \times ((U/5)^{-1.3}) / ((M/2)^{-1.4})$ TofA= ton of aggregate
SUM(PM10, T/yr)			1.04							

Reference	Process	Pollutants	Procs. Rate	Unit	EFs	Unit	Uncontl. Emis. (lb/hr)	Cost Eff.	Cost Emis. T/yr	Remark
	Dryer									ToP= ton of product
AP-42,T11.1-2(1/95)		PM10	80	TofP/hr	4.5	lb/TofP	360.00	1576.80	0.0%	1576.80
AP-42,T11.1-2(1/95)		PM	80	TofP/hr	32	lb/TofP	2560.00	11212.80	0.0%	11212.80
AP-42,T1.3-2(1/95)		CO	714.6	Gal/hr	5	lb/10 ³ gal	3.57	15.63	0.0%	15.63 gal/hr = 100.05 (MMBtu/hr) / 0.14 (MMBtu/gal)
AP-42,T1.3-2(1/95)		NOx			20	lb/10 ³ gal	14.29	62.60	0.0%	62.60
AP-42,T1.3-2(1/95)		SO2			71	lb/10 ³ gal	50.74	222.24	25.0%	166.68
AP-42,T1.3-4(1/95)		VOC			0.2	lb/10 ³ gal	0.14	0.63	0.0%	0.63
SUM(PM10, T/yr)			1576.80							

Reference	Process	Pollutants	Procs. Rate	Unit	EFs	Unit	Uncontl. Emis. (lb/hr)	Cost Eff.	Cost Emis. T/yr	Remark
	Post-dryer									
AP-42,13.2.4(1/95)	dryer->belt conveyor	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
	conveyor->pug mill screens	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
AP-42,8.19.1(9/91)	screening process	PM10	76	TofA/hr	0.12	lb/T	9.12	39.93	0.0%	39.93
		PM	76	TofA/hr	0.16	lb/T	12.16	53.26	0.0%	53.26
	pug mill screens->elevator	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
	elevator->hot bins	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
	hot bins->weigh hopper	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
	weigh hopper->pug mill	PM10	76	TofA/hr	0.001	lb/T	0.08	0.35	0.0%	0.35
	emissions after pug mill negligible									
SUM(PM10, T/yr)			42.03							

SUM(PM10, T/yr) 42.03

HAPs from Asphalt Plant

Reference	Process	Pollutants	Procs. Rate	Unit	EFs	Unit	Uncontl. Emis. (lb/hr)	Cost Eff.	Cost Emis. T/yr	Remark
AP-42,T11.1-9(1/95)		CASRN								
		75070	80	TofP/hr	0.00064	lb/TofP	0.05	0.22	0.0%	0.22 Assume con. eff of fabric filter is 99%
		71432	80	TofP/hr	0.00035	lb/TofP	0.03	0.12	0.0%	0.12 EFs after fabric filter is converted to EFs w/o conal
		100414	80	TofP/hr	0.0033	lb/TofP	0.26	1.16	0.0%	1.16 EFs(w/o conal)=EFs(w/ conal)/(1- conal. eff)
		50000	80	TofP/hr	0.00086	lb/TofP	0.07	0.30	0.0%	0.30
		91203(b)	80	TofP/hr	0.0042	lb/TofP	0.34	1.47	0.0%	1.47
		106514	80	TofP/hr	0.00027	lb/TofP	0.02	0.09	0.0%	0.09

AP-42,T11.1-12(1/93)

Appendix B-2				continua			
108883	80	TotP/hr	0.0018 lb/TotP	0.14	0.63	0.0%	0.63
1330207	80	TotP/hr	0.0043 lb/TotP	0.34	1.51	0.0%	1.51
91203(b)	80	TotP/hr	0.0045 lb/TotP	0.36	1.58	0.0%	1.58
Arsenic	80	TotP/hr	0.000066 lb/TotP	0.01	0.02	0.0%	0.02
Beryllium	80	TotP/hr	0.000022 lb/TotP	0.00	0.01	0.0%	0.01
Cadmium	80	TotP/hr	0.000084 lb/TotP	0.01	0.03	0.0%	0.03
Chromium	80	TotP/hr	0.000089 lb/TotP	0.01	0.03	0.0%	0.03
Hexavalent- Chromium	80	TotP/hr	0.000000 lb/TotP	0.00	0.00	0.0%	0.00
Lead	80	TotP/hr	0.000074 lb/TotP	0.01	0.03	0.0%	0.03
Manganese	80	TotP/hr	0.000099 lb/TotP	0.08	0.35	0.0%	0.35
Mercury	80	TotP/hr	0.000045 lb/TotP	0.00	0.02	0.0%	0.02
Nickel	80	TotP/hr	0.000042 lb/TotP	0.03	0.15	0.0%	0.15
Selenium	80	TotP/hr	0.000009 lb/TotP	0.00	0.00	0.0%	0.00

APPENDIX C

APPENDIX D

ABBREVIATED AIRS DATA ENTRY SHEET

Permit Issue Date:

777-00014

(SIP/NESHAP/
HSPS/PSD)

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20-99203

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AIRS-PT, LST (9/95)